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ABSTRACT

A study investigated whether semantic feature analysis (SFA) significantly improves the content related vocabulary knowledge and reading comprehension of adolescent, learning disabled readers. SFA is a set of vocabulary development activities designed to help students categorize vocabulary words and compare related ideas. Subjects, 62 learning disabled high school students, were divided into an experimental and a control group and assessed for prior knowledge of a social studies textbook passage. In the SFA activity, the experimental students completed a relationship chart listing the passage's major concepts and related vocabulary, then rated the relationship of each vocabulary word to each major concept. The control group looked up 10 of the passage's "difficult" vocabulary words in the dictionary, writing down the definition and an appropriate sentence. The results of the ANCOVA for the total score on the comprehension tests given after the study sessions indicated that the SFA group scored significantly higher than the vocabulary "look-up" group. The results suggest that when directed toward structured discussion of the major concepts within the content area, "passive" learning disabled students participate actively in their learning. (HTH)

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The Effect of Semantic Feature Analysis on the Reading Comprehension of Learning Disabled Students

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Semantic feature analysis (Johnson & Pearson, 1978) is a vocabulary development activity designed to help students categorize vocabulary words and to distinguish similarities and differences between and among related ideas. Johnson, Toms-Bronowski, and Pittelman (1981) identified this activity as reflecting a knowledge hypothesis of learning; that is, semantic feature analysis (SFA) is an activity that capitalizes on the categorical nature of memory structures for

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individual words and words in prose by encouraging students to relate bits of information to comparable categories. These relationships between and among words and categories are displayed on a grid which depicts the various relationships.

The superiority of SFA in learning vocabulary words was demonstrated in a study conducted by Johnson, Toms-Bronowski, and Pittelman (1982). In this study SFA, semantic mapping, and a control condition were compared. The fifth grade subjects who received the SFA activity learned significantly more vocabulary words than either the semantic mapping group or the control group. Johnson et al. suggested that future research investigate whether SFA is a beneficial activity for teaching vocabulary related to specific reading assignments in the content areas.

Research Question

With this suggestion in mind the following instructional research question was formulated. Would the SFA activity significantly improve adolescent learning disabled readers' content related vocabulary knowledge and reading comprehension when compared with a control group of adolescent learning disabled readers who participated in a traditional vocabulary look-up activity?

Method

Subjects

Sixty-two learning disabled high school students attending a large metropolitan high school served as subjects. Learning disabled students were identified as sharing the following characteristics: they were currently receiving resource services for their learning disabilities, were reading from three to seven years below grade level as measured by an individually administered reading test, and had either a performance, verbal, or full scale IQ between 85 and 115. Intact special education classes of these subjects were randomly assigned to the treatment or control conditions. Each group consisted of 31 subjects. Subjects were also blocked for grade with freshmen and sophomores serving as one group and juniors and seniors serving as the other group.

Materials

The materials consisted of a prior knowledge assessment, an experimental passage and accompanying comprehension test, and a practice passage and comprehension test.

The prior knowledge assessment was a 20-item multiple choice test designed to measure the students' prior knowledge concerning the major concepts presented in the experimental passage. This assessment was based on results from the Prereading Plan (PReP), a procedure for assessing students' prior knowledge (Langer, 1981). A group of 30

average achieving high school students participated in the PreP procedure. The items for the prior knowledge assessment were developed using the information obtained from these average students' brainstorming about the topic of the experimental passage, i.e., searches and seizures and the Fourth Amendment.

The experimental passage was a 1500 word expository passage adapted from an instructional social studies series (Martz and Novelli, 1978) with a Fry readability (Fry, 1968) of sixth grade level. The accompanying comprehension test was a 20-item multiple choice test with ten vocabulary items and ten conceptual items. The vocabulary items were selected for their strong relationship to the major concepts presented in the passage and were not necessarily the most "difficult words". The conceptual items required the students to apply the concepts presented in the passage to specific situations.

The practice passage was adapted from the same textbook and was on the topic of consumer credit. The practice comprehension test was developed using the same procedures as for the experimental comprehension test.

Procedure

Two weeks before the initiation of the practice session the learning disabled students were given the prior knowledge assessment. Next the practice session was conducted with each student participating in the instructional condition to which he/she had been assigned. One week after the practice session the experimental session was

conducted. Like the practice session, the experimental session took two fifty-minute class periods on successive days. During the first day the students were introduced to the study and then given 35 minutes to either complete the vocabulary look-up activity or the SFA activity. The remainder of the class period and 15 minutes of the second day were spent silently reading the passage. During the second day 10 minutes were spent either reviewing the looked-up vocabulary words or reviewing the relationship chart completed during the SFA activity. The remainder of the period was spent taking the comprehension test.

For the vocabulary look-up condition ten "difficult" words were selected for the students to look-up in the dictionary. Students were asked to write a definition and sentence using the word. Students were encouraged to read the passage to prepare for the comprehension test. The teachers reported that this represented the typical vocabulary instruction in their classes.

In the SFA activity the students and teacher completed a relationship chart. This chart listed the major concepts presented in the passages across the top and listed the related vocabulary down the side. First the teacher briefly explained the major concepts and each vocabulary word. Then the students, through discussion led by the teacher, rated each vocabulary word in relation to each major concept as having: a) a positive relationship, b) a negative relationship, c) unrelated, or d) don't know the relationship. Students in the SFA

condition were encouraged to read the passage to verify their ratings and clarify any relationships that were rated as don't know.

Five teacher-researchers were randomly assigned to teach classes participating in the experiment. Each teacher-researcher had been trained in both the SFA and vocabulary look-up procedures prior to the study.

Results

The data were analyzed to determine if students participating in the SFA activity scored significantly higher on the comprehension test than students involved in the vocabulary look-up condition. Three separate analyses of covariance (ANCOVA) were used to analyze the data with the covariate being the prior knowledge assessment scores. The uncovaried means and standard deviations are presented in Table 1. The results of the ANCOVA for the total score on the comprehension test indicated that the SFA group scored significantly higher than the vocabulary look-up group ($F = 55.06$, df 1, $p < .001$) and that there were no significant effects for grade or the treatment by grade interaction. Comparison of treatment groups on the 10 conceptual items ($F = 43.34$, df 1, $p < .001$) and the 10 vocabulary items ($F = 33.12$, df 1, $p < .001$) revealed the same effects. The covariate, prior knowledge, did account for significant adjustments in the group means for the total score on the comprehension test ($F = 6.05$, df 1, $p < .05$) and on

the conceptual score ($F = 6.39$, df 1, $p < .05$) but not on the vocabulary score ($F = 2.48$, df 1).

Discussion

The results of this study are important for at least two reasons. First, the subjects of this study were identified as learning disabled adolescents. Torgesen (1980) and Bos and Filip (1982) have identified these students as being passive learners, learners who do not spontaneously become involved in the learning process. The results of this study suggest that when directed toward structured discussion of the major concepts within the content area, these "passive" students actively participate in learning. Further, an activity which requires active conceptual involvement results in both reading comprehension and increased vocabulary knowledge. Initially subjects appeared to resist participating in the SFA activity. Some students in the SFA condition reported that they would rather look words up in the dictionary, because it was easier to look words up than to participate in the discussion required in the SFA activity. However, at the conclusion of the activity several students volunteered positive reactions. One student even remarked, "It was a great activity; I knew the answers to the test."

The second important point is that this study contributes to the content area reading research literature. Historically vocabulary studies introduced unknown or difficult vocabulary to subjects which

was not necessarily related to the major ideas in the subject area content. These studies, although viable in their own right, have limited implications to those who are responsible for teaching vocabulary in the content areas. The consequence of many of these studies in the real world of teaching has been that when teachers did teach vocabulary, they were likely to teach "difficult" words rather than idea-related words. The results of this study suggests that when students interact with the major concepts in a reading passage and the vocabulary which relates to those concepts, they do indeed understand what they are reading and learn the vocabulary.

Implications for Further Research

The results of this study suggest the following three areas for research. First, other vocabulary strategies should be investigated in a content area instructional context. Anders and Bos (in press) advocated several vocabulary activities for teachers of learning disabled students in content area classes; however, very little research was found to support those activities. Such research is needed if recommendations are to be made to teachers of learning disabled students.

Second, future studies might investigate whether the SFA activity facilitates the vocabulary acquisition and reading comprehension of content area materials with average and above average readers as well as readers at other ages.

Third, future studies might investigate the long term learning effects of the SFA activity. Johnson et al. (1982) found that SFA affected long-term memory of isolated vocabulary words. It is yet to be determined whether or not the same is true when the vocabulary is related to content area ideas. The knowledge hypothesis, however, would predict that long-term memory would be sustained.

Conclusions

This instructional research study investigated the effect of SFA for learning content-related vocabulary and for enhancing the reading comprehension of learning disabled students. The treatment group was significantly more successful than the control group in both vocabulary learned and comprehension of the passage. The results of this study suggest that SFA is a useful strategy for teaching both content area vocabulary and reading comprehension to adolescent learning disabled students in content area classes.

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Table 1

Uncovaried Means and Standard Deviations of Groups by Treatment

Treatment		Prior Knowledge Assessment	Comprehension Test Total	Vocabulary	Conceptual
Possible Points		20	20	10	10
Vocabulary Look-Up (n=31)	$\bar{X}$	7.03	11.26	5.49	5.77
	SD	2.33	3.25	2.00	1.84
Semantic Feature Analysis (n=31)	$\bar{X}$	6.68	16.06	7.74	8.32
	SD	3.07	2.39	1.32	1.51